Mississippi Transitional Refresher Course
External Jugular Cannulation
Course Objectives

Upon completion of this course, the student will be able to:

1. Discuss specific anatomy for external jugular cannulation.

2. Discuss indications, contraindications, advantages and disadvantages of external jugular cannulation.

3. Discuss complications of external jugular cannulation.

4. Identify external jugular on live model.

5. List steps involved in the initiation of external jugular cannulation.

6. Demonstrate proper technique external jugular cannulation on a manikin.

Mississippi Transitional Refresher Course
External Jugular Cannulation
Course Outline

The external jugular vein is a large vessel in the neck that may be used by paramedics for intravenous cannulation. This vein is considered to be a peripheral site. If EMS systems allow the procedure, external vein cannulation can be used for any patient that presents with a definite need for peripheral intravenous cannulation. Landmarks; the external jugular runs from behind the angle of the jaw downward across the sternocleidomastoid muscle to pierce the fascia above the middle third of the clavicle.

1. INDICATION:

    1. In patients who requires peripheral intravenous cannulation in whom an extremity vein cannot be accessed.

2. CONTRAINDICATIONS:

    1. Inability to visualize the vein

    2. Obscured landmarks caused by local trauma, hematoma or subcutaneous emphysema

    3. Cervical collar

3. EQUIPMENT:

    1. IV fluid ordered

    2. IV infusion set: use microdrop tubing for lifelines used for drug administration, and macrodrip for rapid fluid administration

    3. IV extension tubing

    4. IV catheter (cannula) preferably 18 gauge for lifelines and 12-14 gauge for fluid administration

    5. Povidone-iodine or alcohol preps

    6. Sterile dressing (4x4 gauze pads)

    7. Adhesive tape strips, 3 to 4 inches in length

    8. 10 cc syringe, vacutainers for blood samples

9. Gloves

10. Eye protection

4. PROCEDURE:

1. Explain procedure to patient

2. Use body substance isolation

3. Position the patient supine with feet elevated (when possible)

4. Turn the patient's head in the direction away from the side to be cannulated

5. Prep the skin with povidone-iodine

6. Apply traction on the vein just above the clavicle

7. Attach a 10 cc syringe to an IV catheter. Align the catheter and point the tip of the catheter toward the feet.

8. Tell the patient there will be a quick, painful stick.

9. With the bevel of the needle upward, puncture the skin using a 30-degree angle. The needle tip should enter midway between the angle of the jaw and the clavicle, and should be aimed toward the shoulder on the same side as the vein. Apply suction to the syringe. As the vein is entered, note a flashback of blood.

10. Carefully lower the catheter and advance the needle and catheter approximately 2 mm to stabilize the needle in the vein.

11. Slide the catheter off the needle into the vein and then remove the needle. Dispose of needle and syringe into a puncture proof container. Don't attempt to recap the needle.

12. Consider drawing a blood sample using a syringe or luer-adapter and vacutainer.

13. Attach the infusion tubing to the hub of the catheter.

14. Open the flow regulator on the IV tubing. The fluid should run freely.

15. Cover the site with povidone-iodine ointment

16. Tape the catheter to the skin using any acceptable technique.

17. Make loop with the infusion tubing and tape the loop to the neck so there will be extra tubing in case the IV bag is accidently pulled away from the patient. Never use circumferential taping because of vascular compromise that can result in a decreased cerebral circulation.

18. Document procedure.

Mississippi Transitional Refresher Course
Medication Administration
Course Objectives

Upon completion of this course, the student will be able to:

1. Discuss specific anatomy and physiology pertinent to medication administration.

2. Discuss indications, equipment, techniques and precautions for administering; inhalation, parenteral, percutaneous and enteral routes of medication.

3. Discuss medical asepsis and the difference between clean and sterile techniques.

4. Assemble appropriate equipment needed for medication administration.

5. Demonstrate proper technique on a manikin for medication administration.

6. Demonstrate and discuss disposal of contaminated items and sharps.

Mississippi Transitional Refresher Course
Peripheral Vein Access
Course Objectives

Upon completion of this course, the student will be able to:

1. Explain rationale for performing peripheral and scalp cannulation.

2. Identify proper anatomical structures of the arm, leg and scalp for procedure.

3. Discuss indications, contraindications, and complications of peripheral and scalp cannulation.

4. Assemble appropriate equipment needed for cannulation.

5. Demonstrate peripheral and scalp cannulation procedures on mannikin.

Mississippi Transitional Refresher Course
Peripheral Vein Access
Course Outline

Peripheral access in the neonate or pediatric patient can be very challenging, even for an experienced paramedic. This procedure can be very difficult due the small size of the vessels, along with the pediatric patient that is uncooperative. Generally, the large veins of the arm, leg, or scalp are selected, using a 20, 22, or 24 gauge over-the-needle catheter.

1. INDICATIONS:

    1. Any medical condition, such as cardiopulmonary arrest, accidental overdose, or sepsis, that suggests an IV or possible medication administration.

    2. Any traumatic event such as head injury, multiple fractures, or shock that suggests the need for volume resuscitation.

2. CONTRAINDICATIONS:

    1. There are no contraindications to initiating an IV in the pediatric patient who is in need of vascular access.

3. EQUIPMENT:

    1. IV fluid ordered

    2. IV infusion set--use microdrip tubing for life-lines used for drug administration, and macrodrip tubing for rapid fluid administration

    3. IV catheter (cannula): 20, 22, 24-gauge over-the-needle

    4. Povidone-iodine or alcohol prep

    5. Sterile dressing (4x4 gauze pad)

    6. Adhesive tape strips, hypoallergenic, 1/2" to 1" wide

    7. 10 cc syringe, vacutainers for blood samples

    8. Tourniquet

    9. Armboard

    10. Gloves

11. Eye protection

4. PROCEDURE: EXTREMITY VENIPUNCTURE

1. Body substance isolation

2. Assemble equipment needed. Set up intravenous solution, flush tubing, and tear tape.

3. Immobilize the extremity.

4. Place a venous tourniquet proximal to the proposed site. A rubber band can be used if the extremity is very small.

5. Locate a suitable vein that will accept a catheter. Cleanse the site, using an alcohol or iodine prep.

6. Perform venipuncture, using aseptic technique. Watch for blood return. Because of the small catheter lumen and lower venous pressure, the flashback may not be as apparent as it is in adults.

7. Slowly advance the catheter and remove the needle.

8. Release the tourniquet and attach IV solution.

9. Slowly introduce fluid into the vein. If patent, adjust the flow rate.

10. Secure the catheter, using an acceptable method. With an active child, extra tape or roller-gauze dressing is advisable.

11. Routinely reconfirm IV patency and drip rate.

12. Document procedure.

5. PROCEDURE: SCALP VEIN VENIPUNCTURE

1. Body substance isolation

2. Assemble equipment needed. Set up IV solution, flush tubing, and tear tape.

3. Immobilize the child on a pediatric spineboard or immobilization device, if necessary.

4. Place a rubber band tourniquet around the head.

5. Locate a suitable vein that will accept a catheter. Clean the site, using alcohol or iodine preps. It may be neccessary to shave a small area of hair.

6. Perform the venipuncture using aseptic technique. Watch for blood return. Because of the small catheter lumen and lower venous pressure, the flashback may not be as apparent as it is in adults. In many cases, a small-gauge butterfly needle is used in initiating the scalp vein IV.

7. Slowly advance the catheter and remove the needle, if using over-the-needle catheter. If using a butterfly, slowly advance the needle.

8. Release the tourniquet and attach IV sloution.

9. Slowly introduce fluid into the vein. If patent adjust the flow.

10. Secure the catheter or needle, using acceptable taping method. With an active child, extra tape or roller-gauze dressing may be advisable.

11. Routinely reconfirm IV patency and drip rate.

12. Document procedure.

Mississippi Transitional Refresher Course
Tracheobronchial Suctioning
Course Objectives

Upon completion of this course, the student will be able to:

1. Discuss indications and contraindications of tracheobronchial suctioning.
2. Identify equipment and technique for tracheobronchial suctioning.
3. Discuss advantages and disadvantages of tracheobronchial suctioning.
4. Identify special considerations of tracheobronchial suctioning in the intubated patient.
5. Demonstrate tracheobronchial suctioning on mannikin.

Mississippi Transitional Refresher Course
Tracheobronchial Suctioning
Course Outline

Paramedics are called on to perform deep suctioning in many situations, both medical and trauma. During suctioning, oxygen is removed from the tracheobronchial tree. In a patient with an existing relative hypoxia, this may induce cardiac dysrhythmias, apnea, or cardiac arrest. Always preoxygenate the patient for at least 2-5 minutes before suctioning if possible. Do not suction for more than 10 to 15 seconds at a time. The patient's cardiac rhythm should be monitored throughout the procedure.

1. INDICATIONS:

    1. When the patient is unable to clear secretions because of illness, overproduction, or very tenacious secretions.

    2. Suctioning is also done in intubated medical and trauma patients.

2. CONTRAINDICATIONS:

    1. There are no contraindications if patient meets above criteria.

3. COMPLICATIONS:

    1. Sudden hypoxemia that occurs secondary to decreased lung volume during the suction application.

    2. Severe hypoxemia that may lead to cardiac rhythm disturbances and cardiac arrest.

    3. Airway stimulation that may increase arterial pressure and cardiac rhythm disturbances.

    4. Coughing that may result in increased intracranial pressure with reduced blood flow to the brain and increased risk of herniating in patients with head injury.

    5. Soft tissue damage to the respiratory tract.

4. EQUIPMENT:

    1. Sterile tracheal suctioning kit
    2. Cup for water
    3. Suction unit
    4. Gloves

5. Eye protection

5. PROCEDURE:

1. Observe body substance isolation

2. When opening the kit, identify the sterile glove on top. Put this on the dominant hand, taking care not to touch the outside of the glove with the other hand.

3. Grasp the catheter with the gloved hand. Keep the catheter looped around your hand.

4. With the ungloved hand pour sterile saline solution into the cup provided.

5. Connect the catheter to the suction machine, taking precaution not to touch any other part of the catheter except the proximal tip with the ungloved hand.

6. With the catheter looped around the gloved hand, you should be able to occlude and release the side port with your thumb.

7. Feed the catheter through the patient's nose or, if intubated the ETT. It is suggested to use a sterile catheter with each suction attempt. It there are two gloves, you will need an assistant to give you the sterile saline. Or you may pour the saline solution into the cup provided before putting on the second glove. This makes it easier to observe absolute sterile precautions.

8. Document procedure.

6. PROCEDURE: TRACHEAL SUCTIONING OF THE NONINTUBATED PATIENT

1. Place the patient in a semi-sitting position. Unconscious patients are positioned on their side.

2. Supply 100% oxygen for at least 3 minutes.

3. Open the catheter kit and prepare for suctioning.

4. Insert the catheter through a nostril into the pharynx, without engaging the suction.

5. Ask the patient to assume the sniffing position and take slow, deep breaths.

6. Advance the catheter during inspiration. Entering the larynx should induce coughing. Advance through the vocal cords.

7. Engage suction intermittently and withdraw the catheter with a rotating motion.

8. When tracheal suctioning is completed, you may use the catheter to suction around the mouth. Once you have suctioned around the mouth, do not introduce the catheter into the trachea again.

9. If you need to use tracheal suctioning again preoxygenate the patient for 30 seconds and repeat the steps, using a new sterile catheter.

10. Dispose of contaminated materials properly.

11. Document procedure.

7. PROCEDURE: TRACHEAL SUCTIONING OF THE INTUBATED PATIENT

1. Make sure the patient's cardiac rhythm is being monitored.

2. Preoxygenate with 100% oxygen.

3. Prepare for suctioning. Have an assistant disconnect the bag.

4. Introduce the catheter through the tube without touching the outside of the tube.

5. Advance the catheter as far as possible.

6. Engage intermittent suction and slowly withdraw the catheter. Do not apply suction for more than 15 seconds.

7. It may be necessary to inject 3 to 5 cc of sterile saline down the tube to loosen secretions.

8. Monitor the patient closely. Remember to preoxygenate if you need to suction the patient again. Discontinue suctioning if you see cardiac dysrhythmias, and ventilate the patient with 100 % oxygen.

9. Dispose of contaminated materials properly.

10. Document!

Mississippi Transitional Refresher Course
Vascular Access-Central Port/VAD
Course Objectives

Upon completion of this course, the student will be able to:

1. Identify patients that might have VAD.
2. Discuss three general categories of VAD and appropriate use in prehospital setting.
3. Describe indications, contraindications, advantages and disadvantages of VAD.
4. Identify equipment needed to access the different types of VAD.
5. Discuss the need for aseptic technique.
6. Demonstrate access of VAD.

Mississippi Transitional Refresher Course
Vascular Access Devices
Course Outline

Many types of VADs are currently in use, they are classified into three categories: central venous catheters (CVC), implanted ports, and peripheral inserted central catheters (PICC). Although paramedics do not insert these in the field, a working knowledge of the general types and functions of the VADs are important for the paramedic to know. Patients with chronic illness who need frequent blood drawings, blood transfusions, hydration therapy, nutritional support, pain management, or chemotherapy will have VADs.

1. INDICATION:

    1. When the patient needs IV fluids or medications and the paramedic is unable to access peripheral, external jugular or intraosseous on pediatric patient.

2. CONTRAINDICATION:

    1. Individuals without training on accessing the VAD.

3. COMPLICATIONS:

    1. Several difficulties related directly to the presence of a VAD may occur. Some of the more common complications are; site infection, sepsis, thrombosis, torn or leaking catheter, and air embolism.

4. EQUIPMENT:

    1. PICC:

        1. Sterile gloves
        2. Alcohol or iodine pads
        3. Smooth hemostats
        4. 20 gauge or smaller needle
        5. 10 cc syringe
        6. Heparin or normal saline (per protocol)
        7. Tape

    2. IMPLANTED:

        1. Sterile gloves
        2. Alcohol or iodine pads
        3. Huber needles or 21 gauge or smaller
        4. Syringe

5. Heparin or normal saline (per protocol)
6. Tape

5. PROCEDURE: PICC

1. Obtain pertinent medical history if possible, and any information regarding type of VAD.

2. Attempt peripheral, external jugular, or intraosseous access per protocol.

3. Identify location and type of VAD, (central venous catheter, implanted port, etc.)

4. Disconnect or discontinue any pumps or medications, use knowledgable family members, or homecare giver if possible.

5. Clamp the VAD closed to prevent air embolus by folding the catheter over or using smooth hemostats.

6. If multiple lumen, identify the lumen to be used.

7. Use strict aseptic technique. Briskly wipe the injection cap with an alcohol or iodine pad.

8. Insert the needle, (20 gauge or smaller) with syringe attached, into the cap. Aspirate slowly 3-5 ml of blood to avoid collapsing the catheter. Obtain blood samples if neccessary, then flush line with solution, (**VACUTAINER SHOULD NOT** be used with a PICC line.)

9. Insert the needle, attached to a medication syringe or IV tubing, and infuse medications or fluids.

10. Secure the IV tubing.

11. Reassess the infusion site and patient condition.

12. Document procedure.

6. PROCEDURE: IMPLANTED PORTS

1. Obtain pertinent medical history if possible, and any information regarding type of VAD.

2. Attempt peripheral, external jugular, or intraosseous access per protocol.

3. Identify location and type of VAD, (central venous catheter, implanted ports).
4. Carefully palpate the location of the implanted port.

5. Disconnect or discontinue any pumps or medications, use knowledgable family members, or homecare giver if possible.

6. Clamp the VAD closed to prevent air embolus by folding the catheter over or using smooth hemostats.

7. If multiple lumen, identify the lumen to be used.

8. Use strict aseptic technique, prep the site with alcohol or iodine pad. Wipe from the center outward three times in a circular motion.

9. Using a sterile gloved hand, press the skin firmly around the edges of the port.

10. Using a syringe filled with solution, insert the Huber needle or 21ga or smaller, perpendicular to the skin. The needle and syringe or IV tubing should be flushed first. The needle must be inserted until it touches the back of the port. This may require a great deal of pressure to puncture the skin, or scar tissue.

11. Aspirate slowly 3-5 ml of blood, if it does not return freely the device should not be used. Obtain blood samples if neccessary, then flush port with solution prior to infusion.

12. Insert the needle, attached to a medication syringe or IV tubing, and infuse medications or fluids.

13. Secure the IV tubing.

14. Reassess the infusion site and patient condition.

15. Document procedure.